

ASD Weekly Highlights for the Week Ending 10-Feb-2006

Operations

Running beam for Commissioning Studies:

Keep building access in it's current configuration

Continuing to track the Cooling Water for 3H and gamma emitters

$\frac{3}{4}$ Operation started Monday 06-Feb

Run LDRD Laser, don't need magnet early in the program.

Install Optics Monday, BCM, HEBT wire scanner

Preparing to restart Commissioning Thursday at 16:00

Run the AP Weekend Program:

Injection Chicane

Ring RF

Instability threshold

Ring Optics, including sextupoles

ARR Meeting

Organizational Meeting Wed. 3:00

ARR Approval for pre-ARR Operation

We want to be able to run to the Extraction Dump following upgrade of PPS to Version 4.

Contacted Ed Lessard, suggested that Asher Etkin come to examine and approve PPS Version 4, as we did for the Ring.

Talked with Asher, is on vacation Mar 6-13, will firm up plans for him to travel on Mar 14 and do the interviews and inspections here on March 15

CD-4

Continuing to meet and work with XFD on the CD-4 Plan

Work completed on SNS Work Flow Process

Will go out for review

Integrating Work Flow and Datastream

First meeting tomorrow

Working on Project Completion Report

Accelerator Physics

RF Systems

LINAC RF

- Replaced transmitter-15 filament power supply (FPS). Reprogrammed the controller chip for this FPS to fix a bug. All of the FPS units will eventually have to be reprogrammed during maintenance periods.

RFTE

RF Group technicians are repairing various chassis, reconfiguring the RFTE waveguide for coupler testing, attending PLC training and supporting Target work.

Ring RF

- Installed ferrite cores to act as common mode chokes on the cavity bias leads of all four cavities. This reduced the RF energy coupled into beam diagnostic equipment and into the Ring RF system cables by a factor of three or better. We continue to work on reducing interference with other systems.
- Worked on understanding the Low Level RF control system with the goal of increasing the beam intensity that the system can properly control.
- We have a development session scheduled for the weekend of February 11, 12 to study beam loading issues.

Ion Source

- The FrontEnd was equipped with ion source # 3. After vacuum conditioning and a 20 minute cesiation at 55 C, the source delivered ~30 mA peak and ~26 mA average. Retuning the next day recovered the beam that was lost overnight. As in the past, a second cesiation will be necessary to achieve higher beam currents.
- All ion source group members have been recertified in Adult CPR and AED by the Appalachian Red Cross.

Controls

- A web page now exists which allows you to see the contents and threads (no pictures) of the elog entries for which you have been notified. If you get email notifications about an elog entry, you can open the web page and see the content for that entry and any other part of the thread. Not that you have to

have gotten a notification for this to work. The page is similar to channel 22 but with the threads and specific to the badge number that is entered. Leading zeros prefixing the badge number are required. See at http://public.ornl.gov/diagnostics/elog_bn/elog_bn_start.cfm.

- The first step has been completed for creating a web-based summary of PC-based IOCs stats. The display is similar to vxstats. This data is now moved from our Altiris server to the global database. Allowing the data to cross through the firewall required some effort but now we should be able to create web pages that summarize status. Also, it should trigger a desire to make the non-PC base data available too.
- The new QtCATool program (a CA client program with a GUI interface) was installed for Linux (all users) and Windows (in developing room). A web page documenting it was built, and an announcement was sent EPICS "tech-talk".
- Development associated with the ETC timing card (for PC-based computer) continued. A small LabVIEW library (similar to a driver) was written to drive the ETC card. A test stand was prepared and installed in timing master test stand area. An important feature of the card is that it can work with different Ring energies. Testing is in progress.
- An installation error was found and corrected on some Fast BLMs so now at least a couple of detectors should work. There are additional problems that are still being worked.
- An "IOC Software Editable Report" was developed as part of the ROCS system. Local maintainers can now edit IOC Software information in Oracle without knowing any Oracle/SQL. The updated information is automatically shown on the Controls web site. This page also contains the maintainer's contact information (emails, phone number, etc.) taken from WHO's through Oracle, so every time an engineer updates his info in WHO's system, it will be automatically updated on this webpage. Report functions were demonstrated during the weekly Controls group meeting.
- Three more wire scanners were installed, tested, and turned over to operations (LDmp WS06, HEBT WS16, and HEBT WS23). A wire scanner was installed at the extraction dump (EDmp WS02) and testing is in process. Two wire scanners (DTL WS428 and CCL WS204) were returned to service.
- Electricians are making good progress on the remaining diagnostic cabling including the RTBT HARP. A technician worked all week on wiring the RTBT Harp actuator. The harp actuator will be installed next week in the RTBT T-section of the tunnel

- Initial measurements were taken on the last four sets of BPM electrodes for RTBT. We do this prior to the BPM electrodes being welded onto the beam line for base line data. We will retest the electrodes after the welding has been accomplished to insure there is no damage from the welding process.
- Three sets of timing system changes intended to enhance the usability of diagnostics timing have been implemented and are being deployed.
- First, three new timing system events have been implemented to provide timing for RTBT diagnostics. These events occur at beam rate, 6 Hz, and 1 Hz. and are positioned a fixed number of turns before the extract event. Diagnostics NADs and IOCs can use these events for timing in the RTBT or when the end of the beam pulse is of interest.
- Second, the existing fast and slow diagnostics events, and the two laser events are timed relative to the first minipulse from the LEBT chopper. Previously these events were timed relative to the ion source turn on. This will keep linac and ring diagnostics timed in to the chopped beam.
- Third, detailed timing instructions for use by diagnostics have been written and disseminated. Diagnostics software maintainers are being encouraged to use the ring period information on the RTDL to adjust timing so that changes in the ring clock do not affect timing. When these changes are implemented and an initial "time in" is complete, timing will be maintained to well within one minipulse at all diagnostics with no manual intervention.
- A hardware flaw in the V124 module was discovered this week after implementing the above changes. After several days of observing mysterious MPS faults and other symptoms, the cause was tracked down to missed timing system cycles and further tracked down the V124 missing interrupts. A suitable software work around was implemented, tested, and installed on the accelerator timing system on Thursday morning.
- Controls Group support of Target FOIST testing continued. There are now approximately 12 people supporting Target I&C checkout. We are making good progress in resolving issues identified during testing and operating. A draft of the "Service Bay Evacuation Alarm System (SBEA) Certification Procedure" was issued for comment. Testing of corrective measures taken to resolve problematic flow readings continued with good results.

SRF Facility

Project Upgrade

- Current Upgrade planning is being revised to be consistent with anticipated funding for FY07 of \$3sM BA. This basically results in

a one year slippage in the SNS PUP schedule.

- The SNS PUP CD-1 Review is scheduled for May 4 & 5, 2006. Dry runs to prepare for that review are planned for April 17 thru 21, 2006.

Survey and Alignment

- BL3: Collimator alignment in hut, BL2: Re-set chopper #1 in S&A lab.

HEBT:

Map angular orientation of laser diagnostic irises with respect to beam line.

Map elevations on beam pipe through QH05, LDR magnets, and QV06.

- RING
- Injection Area Beam Line Trajectory re-construction.

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RTBT:

Pre-align and map rad-hard quad QH30 on test stand.

Align harp vessel guide rails.

Pre-align and map rad-hard quad QV29 on test stand.

Collect, transport, and stage equipment required for rad-hard rail alignment.

Pre-align and map harp vessel on rad-hard test stand.

Re-align and re-map harp vessel to new flange location on rad hard test stand.

RTBT rad-hard mounting rail alignment completed.

- TARGET:
BL4A: Level gauge plate on the three chopper stands (found two that lacked sufficient travel in the kinematic mounts).
BL2: Complete new network observations.
BL2: New network upstream level tie to T2000.
BL13: Fiducialize bulk shield guide CB1.
BL4B: Chopper stand alignment in 3 dimensions with gauge plate completed.
BL4A: Chopper stand alignment in 3 dimensions with gauge plate completed.
BL4B: Set new stand on Newport table in Mag. Measure (leveled and set to guide pins).
BL4B: Set gauge plate on new stand in Mag. Measure to elevation for BL4B chopper #1.
BL2: Re-level chopper stand in S&A lab.
BL4B: Set new stand (again- stand support had to be replaced) on Newport table in Mag. Measure (leveled and set to guide pins).
BL4B: Mapped gauge plate on chopper #1 stand, then placed chopper and mapped fiducials, then made a comparison between data sets.

Miscellaneous:

New portable laser tracker cart assembled.

Cryo Systems

Mechanical Systems

Water Systems

RTBT to Target

- Q-25: Hookup of RTBT Magnet Q-25 completed.
- Q-26: Hose hookup of RTBT Magnet Q-26 completed.
- ValPanel: The 2 PS's and 5 FS's have disappeared from the valve cabinet, have been re-ordered.
 - Need to have these in place prior to flowing RTBT magnets 26 thru 30.
- BB: Need some pipe support changes prior to installing the ceramic breaks to/from the bus bars.
- CCWS: Magnet DIWS&R has been connected to the HX on RTBT-CCWS skid.
- CCWS: Filter has been installed and resin bottles have been ordered.
- CCWS: Need replacement UV bulb for sterilizer.
- CCWS: Will have skid ready for T&C/O by Wednesday 02/15/06 when Controls will be available.
- **Ring & RSB**
- PS-RN-03: Need a time slot of 2 to 3 days to shut down the RSB Power Supply loop for pump impeller change out.
- Have talked to vendor on dissolved oxygen and CO2 removal systems, N2 blanketing, and filtering for DI water systems.
 - Waiting feed back on options and estimates.
- Need a time window to remove the remaining 1.1 gpm Griswolds on the Half Cell bus bar circuits for 2.0 gpm units (~2 days).
- Need ~ 2 days to make modifications to the 2 HEBT and Ring CCWS skids to minimize leak issues.

Ring Systems Installation Activities

- The HEBT remaining Charge Exchange Scraper Assemblies (2) were installed.
- The HEBT remaining Wire Scanner Assemblies (3) were installed.
- The RTBT extraction dump Wire Scanner Assembly installation fixture was installed and tested.
- The RTBT extraction dump Wire Scanner Assembly installed.

- The RTBT beamline was installed and leak tested down to sector gate valve SGV_23.
- The RTBT Target Quads pneumatic and leak test lines' installation continued.
- The RTBT HARP assembly continued.
- The RTBT HARP vessel was fiducialized.
- The RTBT HARP vessel BPM and bellows assembly was installed.
- The RTBT Target Quad Magnets Q30 & Q29 were fiducialized.
- The RTBT Chipmunk was relocated to a position downstream of quad QH26
- The RTBT Target quad overhead shielding blocks' welding assembly continued.
- The HEBT and Ring tunnel crossover stairs

Electrical Systems

Power Supplies:

- Extraction Kicker noise on BLMs was reduced by rearranging grounds in the PFN room and the control racks, as well as separating the BLM bias cables from the HV extraction kicker pulsed cables. Kickers 7 and 9 are still introducing a lot of noise; we will look at it again next week.
- Replaced two leaking oil pumps in PFN room.
- Replace the thyatron and thyatron driver on # 5, which had stopped triggering, tested at 30 Hz. Sent the thyatron back to vender for evaluation.
- Ordered blank panels for kicker racks and built prototype PSI filter for extraction kickers.
- Acquired a schematic of the thyatron driver box so repairs can be made on two trigger boxes that are not working.
- Tested the four sextupole power supplies and their associated magnets in the ring.
- Changed out 0.5 amp fan fuses in several supplies with 1 amp fuses. This was causing overheating in the power supplies because the fans weren't running.
- Checked the laser wire magnet connections in the HEBT service building
- Removed several (6) unused DTL power supplies for use as much needed spares
- Replaced the oil level switch on extraction kicker tank #9
- Tested RTBT QV19_25 power supply and their associated magnets in the RTBT.
- Repaired RTBT_MAG:PS_DCH06
- Repaired CCL_MAG:PS_DCV09

Modulators:

- Removed and repaired DTLME-3; replaced leaking heat exchanger, replaced shorted transformer, replaced defective IGBT driver, repaired incorrect oil flow indications, installed new style choke winding, conditioned insulating oil .
- Repaired control chassis on CCLME-3
- Repair work on LEBT Chopper “A”
- Build up spare cards for LEBT Choppers.

Work for XFD Division:

- Drawing design and supervision support for Beamline 4A and 4B
- Start work on the the Analyzer Spin Flipper matching network/driver problem.
- Installation and fabrication of Instruments for 2TU and Beam Line 4 (see photo below of motion control panel built for beam line 4 B)

Other:

- Teresa Toomey started RSS with Sam McKenzie for HEBT RTBT and Ring Service Buildings
- Interviewed 4 candidates for research mechanic-electrical positions.



Installation:

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- Harp Jumper wiring for Diagnostics
- Finished RTBT_MAG:PS_QV27/QH28/QV29/QH30 heavy cables and flags
- Installing Copper Busses for RTBT_MAG_QV27/QH28/QV29/QH30
- Install Conduit and wiring for Harp Controls at Junction Box
- Working on as Built drawings and red lines for Klystron Bldg.
- Reviewed SRO work in progress and completion for Hazelwood work to start in RTBT area for next week
- Started design of beam status light installation for Linac Gallery